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Thomas Wedi

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EXAMINER

KIM, HEE-YONG

ART UNIT

PAPER NUMBER

2482

NOTIFICATION DATE

DELIVERY MODE

10/15/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/587,202	Applicant(s) WEDI ET AL.	
	Examiner HEE-YONG KIM	Art Unit 2482	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/12/2006 and 6/30/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. **Claims 1-32** are objected to because of the following informalities:
2. Regarding Independent **claims 1, 11, 21 and 27**, they recite “the quantization interval of **lowest** coefficient value at the side” . In the light of specification, the examiner interprets it as the quantization interval corresponding to zero coefficient value. Since there are negative coefficients which are lower than zero, It is not true that zero coefficient value is the lowest coefficient. Other claims are dependent on the above independent , therefore they are objected too. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 5-7, 10-11, 15-17, 20-21, 24-27, and 30-32** are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi (JP 5-308,629).

Regarding **claim 1**, Hiroshi discloses Moving Image Encoding System. Specifically Hiroshi discloses A method for encoding video data, comprising the steps of: dividing an image into blocks (Fig.1 and 2, block based coding), each block including a plurality of pixels (16x16 Macroblock, Fig 2(a)), transforming the pixels of a block into transform coefficients (DCT (Discrete Cosine Transform), Fig.1), and

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quantizing the transform coefficients in accordance with predefined quantization intervals by mapping each coefficient value to a quantized coefficient value (Fig.7) wherein characterized in that the size of the quantization interval of the lowest coefficient values is adjusted in accordance with a variable dead-zone parameter (Controlling the width of Deadzone of Quantization, Paragraph 10), and the applied dead-zone parameter is included into the encoded video data for a corresponding modification of the quantization interval of the lowest coefficient values at the decoder side (Change of Deadzone is written into a GOP header, paragraph 21).

Regarding **claim 5**, Hiroshi discloses everything claims as applied above (see claim 1). Hiroshi further discloses wherein said dead-zone parameter being updated every field or frame of a video sequence (Deadzone parameters for I, P, and B pictures, paragraph 20).

Regarding **claim 6**, Hiroshi discloses everything claims as applied above (see claim 1). Hiroshi further discloses wherein said dead-zone parameter being updated once per video sequence to be encoded or for every predefined sub-sequences thereof (Change of Deadzone is written into a GOP (group of picture) header, paragraph 21).

Regarding **claim 7**, Hiroshi discloses everything claims as applied above (see claim 1). Hiroshi further discloses wherein said video data are encoded based on I, P or B type macroblocks (Intra type (I type) or Inter block type (P Or B type) 32, Fig.4) and different said dead-zone parameters (Deadzone Control 31, Fig.4) are employed for each macroblock type.

Regarding **claim 10**, Hiroshi discloses everything claims as applied above (see claim 1). Hiroshi further discloses wherein said method further comprises the step of predicting the block to be encoded based on a previously encoded block (MC (motion compensation) 4, Fig.1) wherein said prediction step comprises a decoding step including an inverse quantization step (IDCT 15, Fig.1) which applies said dead-zone parameter (Deadzone Control 13, Fig.1) for the de-quantization (Q^{-1} 14, Fig.1).

Regarding **claim 11**, the claimed invention is an apparatus claim corresponding to the method claim 1. Therefore, it is rejected for the same reason as claim 1.

Regarding **claim 15**, the claimed invention is an apparatus claim corresponding to the method claim 5. Therefore, it is rejected for the same reason as claim 5.

Regarding **claim 16**, the claimed invention is an apparatus claim corresponding to the method claim 6. Therefore, it is rejected for the same reason as claim 6.

Regarding **claim 17**, the claimed invention is an apparatus claim corresponding to the method claim 7. Therefore, it is rejected for the same reason as claim 7.

Regarding **claim 20**, the claimed invention is an apparatus claim corresponding to the method claim 10. Therefore, it is rejected for the same reason as claim 10.

Regarding **claim 21**, the claimed invention is a decoder corresponding to the encoder of claim 1. Therefore, it is anticipated by the encoder of claim 1. Hiroshi discloses decoder structure in the encoder. Hiroshi teaches A method for decoding encoded video data on a block basis (Fig.1 and 2, block basis coding), said encoded video data include quantized coefficients (input to Q^{-1} , Fig.1), comprising the steps of: de-quantizing a block of quantized coefficients (Q^{-1} 14, Fig.1) of said encoded video

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data by mapping each quantized coefficient value to a de-quantized coefficient value in accordance with predefined de- quantization intervals (Deadzone Control 13 to Q-1 14, Fig.1)), and transforming a block of de-quantized coefficients (IDCT 15, Fig.1) into a block of pixels, wherein the size of the de-quantization interval of the lowest coefficient values is adjusted in accordance with a variable dead-zone parameter (Controlling the width of Deadzone of Quantization, Paragraph 10).

Regarding **claim 24**, the claimed invention is a decoder corresponding to the encoder claim 5. Therefore, it is anticipated by Hiroshi.

Regarding **claim 25**, the claimed invention is a decoder corresponding to the encoder claim 7. Therefore, it is anticipated by Hiroshi.

Regarding **claim 26**, Hiroshi discloses everything claims as applied above (see claim 21). Hiroshi further discloses wherein said dead-zone parameter being part of said encoded video data (Change of Deadzone is written into a GOP header, paragraph 21).

Regarding **claim 27**, the claimed invention is an apparatus claim corresponding to the method claim 21. Therefore, it is rejected for the same reason as claim 21.

Regarding **claim 30**, the claimed invention is an apparatus claim corresponding to the method claim 24. Therefore, it is rejected for the same reason as claim 24.

Regarding **claim 31**, the claimed invention is an apparatus claim corresponding to the method claim 25. Therefore, it is rejected for the same reason as claim 25.

Regarding **claim 32**, the claimed invention is an apparatus claim corresponding to the method claim 26. Therefore, it is rejected for the same reason as claim 26.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 2 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi in view of Gonzales (US 5,301,242) (hereafter referenced as Gonzales).

Regarding **claim 2**, Hiroshi discloses everything claimed as above (see claim 1). However Hiroshi fails to disclose wherein the size of said quantization intervals is adjusted in accordance with a rounding control parameter, said rounding control parameter being not part of said encoded video data.

In the similar field of endeavor, Gonzales discloses Apparatus ... Gonzales specifically discloses wherein the size of said quantization intervals is adjusted in accordance (Equation 1) with a rounding control parameter ($k/2$ in Equation 1), said rounding control parameter being not part of said encoded video data (Examiner maintains that it is implicit in both encoder and decoder), in order to select rounding by nearest integer or truncation (col.5, line 34-36).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Hiroshi by providing specifically rounding control parameter, in order to select rounding by nearest integer or truncation. The Hiroshi deadzone quantization, incorporating the Gonzales rounding control parameter, has all the features of claim 2.

Regarding **claim 12**, the claimed invention is an apparatus claim corresponding to the method claim 2. Therefore, it is rejected for the same reason as claim 2.

7. **Claims 3-4, 13-14, 22-23, and 28-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi.

Regarding **claim 3**, Hiroshi discloses everything claimed as above (see claim 1). However, Hiroshi fails to disclose wherein said dead-zone parameter having a size between a fifth and a half of the interval step size.

However, it was obvious to design a deadzone size bigger by setting the deadzone parameter as between a fifth and a half of the interval size (design choice) compared to the deadzone size (the interval size) for uniform quantization, in order to suppress the noise more and reduce data rate.

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Hiroshi by providing specifically designing a deadzone size bigger by setting the deadzone parameter between a fifth and a half of the interval size, in order to suppress the noise more and reduce data rate. The Hiroshi deadzone quantization, incorporating designing a deadzone smaller between a fifth and a half of the interval size in the case of a low noise, has all the features of claim 3.

Regarding **claim 4**, Hiroshi discloses everything claimed as above (see claim 1). However, Hiroshi fails to disclose wherein said dead-zone parameter having a size of approximately 1/4 of the interval size.

However, it was obvious to design a deadzone size bigger by setting the deadzone parameter as approximately a 1/4 of the interval size (design choice) compared to a deadzone size (the interval size) for uniform quantization, in order to suppress the noise more and reduce data rate.

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Hiroshi by providing specifically designing a deadzone size bigger by setting the deadzone parameter as approximately a 1/4 of the interval size, in order to suppress the noise more and reduce data rate. The Hiroshi deadzone quantization, incorporating designing a deadzone bigger by setting the deadzone parameter as approximately 1/4 of the interval size, has all the features of claim 4.

Regarding **claim 13**, the claimed invention is an apparatus claim corresponding to the method claim 3. Therefore, it is rejected for the same reason as claim 3.

Regarding **claim 14**, the claimed invention is an apparatus claim corresponding to the method claim 4. Therefore, it is rejected for the same reason as claim 4.

Regarding **claim 22**, the claimed invention is a decoder corresponding to the encoder claim 3. Therefore, it is rejected for the same reason as claim 3.

Regarding **claim 23**, the claimed invention is a decoder corresponding to the encoder claim 4. Therefore, it is rejected for the same reason as claim 4.

Regarding **claim 28**, the claimed invention is an apparatus claim corresponding to the method claim 22. Therefore, it is rejected for the same reason as claim 22.

Regarding **claim 29**, the claimed invention is an apparatus claim corresponding to the method claim 23. Therefore, it is rejected for the same reason as claim 23.

8. **Claims 8-9, and 18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi in view of Gomila (JVT-H022) (hereafter referenced as Gomila).

Regarding **claim 8**, Hiroshi discloses everything claimed as above (see claim 1). However Hiroshi fails to disclose wherein said method further comprises the steps of: detecting a degree or the presence of film grain within the video data to be encoded, and adapting the size of said dead-zone parameter in accordance with the detection result.

In the similar field of endeavor, Gomila discloses SEI message for film grain encoding. Gomila specifically discloses wherein said method further comprises the steps of: detecting a degree or the presence of film grain within the video data to be encoded (eye resolves groups of grains, film grain is clearly noticeable in cinema and HD images, pp.1, 2.Introduction), in order to preserve film grain through delivery channel (pp.1, last 2 paragraphs) even though the noise was removed at the encoder by larger QP or other noise (pp.1, last paragraph).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Hiroshi by providing specifically detecting the presence of film grain, in order to preserve film grain. However, Hiroshi

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and Gomila still fail to disclose adapting the size of said dead-zone parameter in accordance with the detection result.

However, Gomila discloses encoding process used to remove film grain, but generating film-grain noise at the decoder by Film grain parameterization and (Fig.2).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Hiroshi and Gomila by providing specifically adapting the size of said dead-zone parameter in accordance with the detection result, in order to improve remove the film grain at the encoder. The Hiroshi deadzone quantization, incorporating the Gomila detecting film grain, further incorporating adapting the size of said dead-zone parameter in accordance with the detection result, has all the features of claim 8.

Regarding **claim 9**, Hiroshi and Gomila, as applied to claim 8, discloses everything claimed except enabling the application of said dead-zone parameter only if film grain has been detected.

However, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Hiroshi and Gomila by providing specifically enabling the application of said dead-zone parameter only if film grain has been detected, in order to remove the film grain noise but not remove the video signal itself. The Hiroshi deadzone quantization, incorporating the Gomila detecting film grain, further incorporating adapting the size of said dead-zone parameter in accordance with the detection result,

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further incorporating enabling the application of said dead-zone parameter only if film grain has been detected, has all the features of claim 9.

Regarding **claim 18**, the claimed invention is an apparatus claim corresponding to the method claim 8. Therefore, it is rejected for the same reason as claim 8.

Regarding **claim 19**, the claimed invention is an apparatus claim corresponding to the method claim 9. Therefore, it is rejected for the same reason as claim 9.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/

Supervisory Patent Examiner, Art Unit 2482

/HEE-YONG KIM/
Examiner, Art Unit 2482